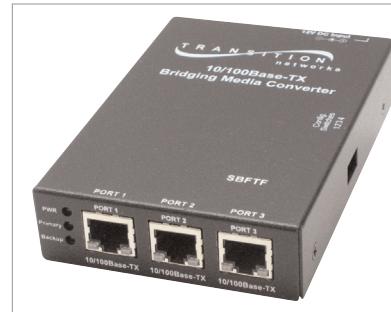


User's Guide

SBFTF1010-130

10/100 Fault-Tolerant Redundant Link Protector

- 10/100 Base-T(x) to 10/100 Base-T(x)
- Ethernet/Fast Ethernet



The SBFTF1010-130 is a fault-tolerant redundant link protector provides redundant paths for fast Ethernet devices. It has three ports: main, primary, and backup. Typically, the main port connects to a critical 10/100 fast Ethernet device. The primary port and the backup port connect to two different switch ports or two different ports on separate switches. When the unit powers up, it checks the primary port for a link signal; if the signal is present, the main and primary ports connect and the signal from the backup port is then disabled. Any device connected to the backup port will not detect a signal at this time. However, if the device does not detect a signal on the primary port, then the main port and backup port connect.

Part Number	Port One - Copper 10/100Base-T(x)	Port Two Copper 10/100Base-T(x)	Port Three - Copper 10/100Base-T(x)
SBFTF1010-130	RJ-45 100 M (328 ft*)	RJ-45 100 M (328 ft*)	RJ-45 100 M (328 ft*)

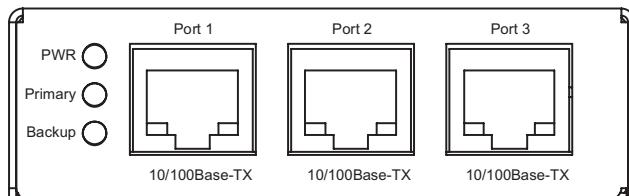
*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network.

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Product Features

Front panel

The SBFTF1010-130 bridging media converter has three 10/100Base-TX ports.



Auto-Negotiation (selectable)

The Auto-Negotiation feature automatically configures the bridging media converter to achieve the best possible mode of operation over a link. The bridging media converter broadcasts its speed (*10 Mbps or 100 Mbps*) and duplex capabilities (*full or half*) to the other devices and negotiates the best mode of operation. Auto-Negotiation allows quick and easy installation because the optimal link is established automatically—no user intervention required.

In a scenario where the media converter is linked to a non-negotiating device, the user may want to disable Auto-Negotiation. In this instance, the mode of operation will drop to the least common denominator between the two devices (*e.g., 10 Mbps, half-duplex*). Disabling this feature gives the user the ability to force the connection to the desired speed and duplex mode.

Data Transfer rate (selectable)

10Base-T data transfer rate: 10 Mbps baseband Ethernet.

100Base-TX data transfer rate: 100 Mbps baseband Ethernet.

Full-Duplex network (selectable)

In a full-duplex network, maximum cable lengths are determined by the type of cables used. The 512-Bit Rule does not apply in a full-duplex network.

Half-Duplex network (selectable) (512-Bit Rule)

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each fast Ethernet collision domain. (*A collision domain is the longest path between any two terminal devices, e.g., terminal, switch, or router.*)

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in bit times (BT) of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

AutoCross™

When the AutoCross feature is activated, it allows either straight-through MDI or crossover MDI-X cables to be used when connecting to 10Base-T or 100Base-TX devices. AutoCross determines the characteristics of the connection and automatically configures the unit to link up, regardless if the cable configuration is MDI or MDI-X. This feature is ON permanently.

Product features -- continued

Redundancy (selectable)

With redundancy enable and the primary port fails, the converter automatically switches data transfer responsibilities to the backup port without disrupting network traffic. After the primary port's failure is resolved, the converter automatically switches data transfer responsibilities back to the primary port.

Parallel detection

Parallel detection is the method used to link when an auto negotiating port detects a link partner that is in forced mode and therefore cannot participate in the auto negotiating process. Parallel Detection does not provide the ability to detect half versus full duplex mode.

Per the IEEE method, an auto negotiating port that detects a forced link partner should drop to the detected speed (*10Mbps or 100Mbps*) and default to half duplex.

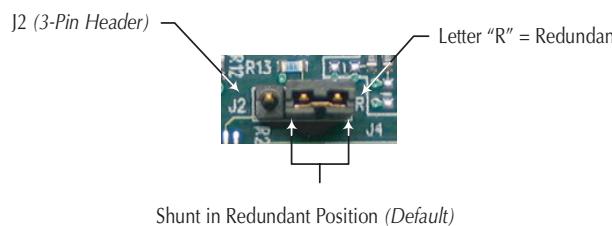
The SBFTF-130 allows bypassing the IEEE method by setting the parallel detection default mode to half or full duplex via DIP switch 3 or through the duplex setting via WEB and Focal Point interfaces.

Installation

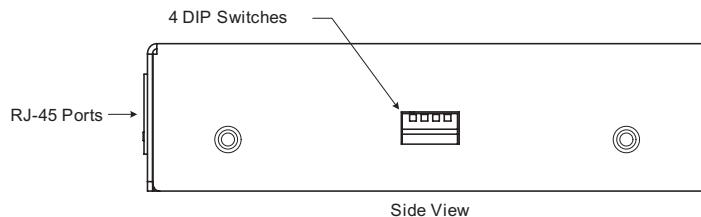
CAUTION: Do Not install the SBFTF1010-130 fault-tolerant redundant link protector in location where it might be exposed to wetness. Failure to observe this caution could result in damage to the device.

Jumper (shunt)

The 3-pin header located on the inner surface of the board is used to select “redundancy.” See photo below. Redundancy Mode automatically switches data transfer responsibilities to the secondary port if the primary port fails.



Set DIP Switch

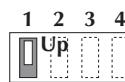


Four (4) Dip Switches

- SW 1: Auto-Negotiation
- SW 2: Speed
- SW 3: Duplex
- SW 4: Redundancy

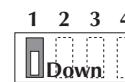
Installation -- Continued

Note: See the diagrams below and use a very small flatblade screwdriver or similar tool to set the DIP switch.

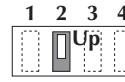


When Auto-Negotiation is enabled (*switch #1 UP*), the bridging media converter advertises all rate and mode capabilities to the network: 100Mb/s full duplex, 100Mb/s half-duplex, 10Mb/s full duplex, and 10Mb/s half duplex.

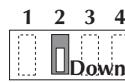
Note: Switches “#3” and “#4” are non-functional when switch “#1” is in the UP position (*Auto-Negotiation enabled*).



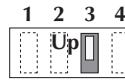
When auto-negotiation is disabled (*switch #1 DOWN*), the bridging media converter does not advertise rate and mode capabilities to the network.



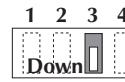
100Base-TX data transfer rate (*switch #2 UP*), 100 Mbps fast Ethernet.



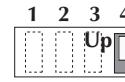
10Base-TX data transfer rate (*switch #2 DOWN*), 10 Mbps fast Ethernet.



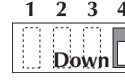
Full duplex switch #3 UP.



Half duplex switch #3 DOWN.



Redundancy enabled switch #4 UP. (*See note below*)



Redundancy disabled switch#4 DOWN.

Note: With redundancy turned OFF, the primary and secondary port LEDs will turn OFF; therefore, returning these ports to normal functionality.

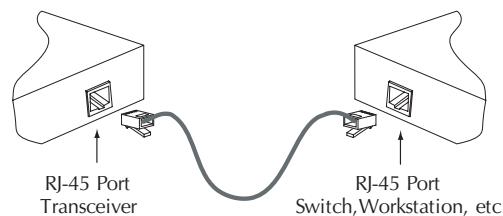
Note: The functionality for each switch setting applies to all ports simultaneously.

Installation --continued

Installing the twisted-pair copper cable

1. Locate or build an IEEE 802.3 compliant 10Base-T or 100Base-TX cables, with male RJ-45 connectors installed onto both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the bridging media converter as shown below.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device (*switch, workstation, etc.*) as shown below.

Note: The MDI (*straight-through*) cable or the MDI-X (*crossover*) cable connection is configured automatically, according to network conditions.

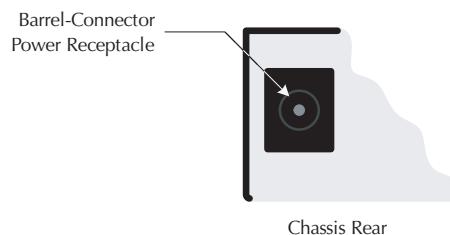


Connecting power to the bridging media converter

AC/DC:

1. Connect the barrel connector of the adapter to the power port of the bridging media converter (*located on the back of the converter shown below*).
2. Connect the power adapter plug into AC power: if all the configuration switches are in the UP position, the port LEDs will flicker during the initialization process and then go OFF.

Note: The power-on LED will be lit (ON).



Operation

Status LEDs

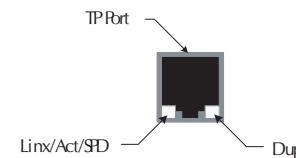
There are three (3) LEDs on the converter chassis front panel and two (2) on each TP port.

Chassis LEDs

Power (PWR):	LED ON indicates connection to an external AC power source
Primary:	ON when the primary port is in use
Backup:	ON when the backup port is in use

TP port LEDs

LINK/ACT/SPD:	Green (ON) for 100 Mbps and Link/Act; Flashing when transmitting data; Orange for 10Mbps
Duplex (DPX):	Green (ON) for full duplex; OFF for half duplex



Cable Specifications

Copper cable (10Base-T/100Base-TX)

Ensure that the correct cable type is installed to support the highest speed and mode of operation. Though category 3 cable is adequate for a 10Base-T installation, category 5 cable is recommended, since category 3 cable DOES NOT support 100Base-TX.

Category 3: *(minimum requirement for 10 Mbps operation)*

Gauge:	24 to 22 AWG
Attenuation:	11.5 dB/100m @ 5-10 MHz
Maximum cable distance:	100 meters

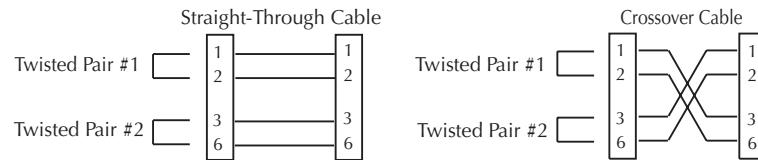
Category 5: *(minimum requirement for 100 Mbps operation)*

Gauge:	24 to 22 AWG
Attenuation:	22.0 dB/100m @ 100 MHz
Maximum cable distance:	100 meters

- Straight-through (MDI) or crossover (MDI-X) cable may be used.
- Shielded (STP) or unshielded (UTP) twisted-pair cable may be used.
- Pins 1/2 and 3/6 are the two active pairs in an Ethernet network.
- Use only dedicated wire pairs for the active pins:
(e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.

Cable Specifications -- continued

Copper cable (10Base-T/100Base-TX) -- continued



10Base-T and the Ethernet collision domain:

- Refer to the 5-Segment Rule before installing half-duplex 10Base-T cable.
- Installing full-duplex twisted-pair cable avoids collision domain considerations—maximum distance 100 meters.

100Base-TX and the Fast Ethernet collision domain:

- Refer to the 512-Bit Rule before installing half-duplex 100Base-TX cable.
- Installing full-duplex twisted-pair cable avoids collision domain considerations—maximum distance 100 meters.

Note: A Fast Ethernet collision domain can have only "1" Class "I" repeater or "2" Class "II" repeaters.

Troubleshooting

If the SBFTF1010-130 fails or initially does not power up and function properly, ask the following questions and take the suggested corrective actions.

1. Is the power LED on the bridging media converter ON?
NO:
 - a. Is the barrel connector from the external power supply fully inserted into the bridging media converter?
 - b. Is the adapter plugged into an external power source?
 - c. Contact Technical Support: 1.800.466.4526, then press "2."
 YES: Go to step 2.
2. Is there an active (*connected to an output source*) RJ-45 cable inserted into the bridging media converter main port?
NO:
 - a. Insert an RJ-45 cable into the bridging media converter main port.
 - b. Insert the other cable end into an active device.
 YES: Go to step 3.

Troubleshooting -- continued

3. Is the link/active LED on the main port lit (ON)?

NO:

- a. Check that the RJ-45 cable is properly inserted into the bridging media converter main port.
- b. Check that the other cable end is inserted into an active device.
- c. Check the cable for damage.
- d. Contact Technical Support .

YES: Go to step 4.

4. Is there an RJ-45 cable inserted into the primary port on the bridging media converter?

NO:

- a. Insert the RJ-45 cable into the bridging media converter primary port.
- b. Insert the other end of the cable into the input of an active device.

YES: Go to step 5.

5. Is the primary LED on the chassis lit (ON)?

NO:

- a. Check that the RJ-45 cable is properly inserted into the primary port.
- b. Check that the other end of the cable is properly inserted into an active device.
- c. Check the cable for damage.
- d. Contact Technical Support.

YES: Go to step 6.

6. Is there an RJ-45 cable inserted into the backup port on the bridging media converter?

NO:

- a. Insert the RJ-45 cable into the bridging media converter backup port.
- b. Insert the other end of the cable into the input of the an active device.

YES: Go to step 7.

7. Is the backup LED on the chassis lit (ON)?

NO:

- a. Check that the RJ-45 cable is properly inserted into the backup port.
- b. Check that the other end of the cable is properly inserted into an active device.
- c. Check the cable for damage.
- d. Contact technical support.

YES: If the LED is ON and still no activity, contact technical support: 1.800.466.4526, then press "2."

Technical specifications

Standards:	IEEE 802.3™ 2000
Regulatory:	Emissions: EN55022 Class A, Immunity: EN55024
Safety compliance:	UL listed, CE Mark (<i>wall-mount power supply</i>)
Data Rate:	10 Mbps, 100 Mbps
Dimensions:	3.25" W, 1" H, 4.8" L (82.6 mm x 25 mm x 121.9mm)
Weight:	10 oz. approximately
Power consumption:	2.4 watts
Power supply:	12VDC, 0.4A minimum
Operating temp:	0°C to 50°C (32°F to 140°F)
Switching time:	<189 ms (<i>primary to secondary port</i>)
Storage temp:	-20°C to +85°C (-4°F to 185°F)
Humidity:	5% to 95%, non-condensing
Altitude:	0 – 10,000 feet
Warranty:	Lifetime

Contact Us

Technical support

Technical support is available at techsupport@transition.com

- US and Canada: 1-800-260-1312 (*24 hours*)
- International: 00-1-952-941-7600 (*24 hours*)

Transition now

Chat live via the Web with Transition Networks Technical Support. Log onto www.transition.com and click the Transition Now link.

Web-based seminar

Transition networks provides seminars via live, web-based training. Log onto www.transition.com and click the Learning Center link.

Email

Ask a question anytime by sending an email to our technical support staff: techsupport@transition.com

Address

Transition Networks
6475 City West Parkway
Minneapolis, MN 55344, U.S.A.
Telephone: 952-941-7600,
Toll free: 800-526-9267
Fax: 952-941-2322



Declaration of Conformity

Name of Mfg: Transition Networks, 6475 City West Parkway, Minneapolis, MN 55344 U.S.A.
 Model: SBFTF1010-130 Stand-Alone Fault-Tolerant Redundant Link Protector
 Part Number: SBFTF1010-130
 Regulation: EMC Directive 89/336/EEC
 Purpose: To declare that the SBFTF1010-130 to which this declaration refers is in conformity with the following standards:
 CISPR 22:1997+A1:2000; EN 55022:1998+A1:2000 Class A; FCC Part 15 Subpart B;
 21CFR subpart J
 I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).


 Stephen Anderson, Vice-President of Engineering

10, 2006
 Date

Compliance Information

CSA Certified

CISPR22/EN55022 Class A + EN55024

CE Mark

FCC regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung ! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention ! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschließlich der gegenseitigen Anerkennung ihrer Konformität.

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